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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/682,502

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Mats Danielsson

GPD0020-US

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28694

7590

11/14/2002

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EXAMINER

GAGLIARDI, ALBERT J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/682,502

Applicant(s)

DANIELSSON, MATS

Examiner

Albert J. Gagliardi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 06 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on 10 March 1999. It is noted, however, that applicant has not filed a certified copy of the Swedish application as required by 35 U.S.C. 119(b).

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 6 September 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

The specification does not include a brief description of proposed Figure 3

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson (US 4,937,453).

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Regarding claim 3, *Nelson* discloses an apparatus **Figs. 1, 6A** for detecting x-rays comprising: an x-ray detector able to be oriented relative to the incident radiation (col. 7, lines 7-11) comprising a plurality of semiconductor strips (12; col. 3, line 63-64) arranged on a substrate (10), the detector of sufficient height such that substantially all of the incident radiation dissipates in the detector (col. 4, lines 12-16), and electrical outputs (12) for each of the strips; and electrical connections (18) between the strips such that the electrical output corresponding to corresponding points in each of the strips is combined, and wherein the area exposed to the incident radiation excludes at least one section of the strip between at least one edge of the detector and one active sensor area (see generally Figs. 4, 6a).

Regarding the ability of the detector to be oriented relative to the incident radiation, it is noted that such limitation, in and of itself, does not imply any additional structural elements (i.e., an orientation means). The examiner further notes, however, that even if some sort of orientation means were implied by the limitation, those skilled in the art appreciate that support structures utilizing an orientation means are well known and that it would have been obvious to a person of ordinary skill in the art to include such means in view of the suggestion by *Nelson* that the detector may be orientated at an angle relative to the incident radiation.

Regarding the orientation of the detector relative to the incoming radiation and the area actually exposed to the radiation, it is noted that such functional limitations do not limit the structure of the claimed apparatus.

Note: Apparatus claims must be structurally distinguishable from the prior art. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Apparatus claims

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cover what a device is, not what a device does. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). See MPEP 2114.

Regarding claim 9, *Nelson* discloses that detector is made of silicon (col. 3, line 58).

Regarding claim 10, *Nelson* discloses that the detector may utilize different materials (col. 6, lines 62-64). Particular materials such as gallium arsenide and CdZnTe are well known for use in radiation detectors and would have been an obvious design choice.

Regarding claim 11, the orientation of the detector relative to the incoming radiation, it is noted that such functional limitation does not limit the structure of the claimed apparatus (see note above).

Regarding claim 12, *Nelson* discloses that the apparatus is used in scanned slot medical imaging (col. 1, lines 5-9). The examiner further notes that "use" limitations are not structural limitations (see not above).

Regarding claim 13, *Nelson* discloses that the apparatus is used in scanned slot medical imaging (col. 1, lines 5-9). Medical imaging applications such as mammography, bone densitometry, and non-destructive testing are well known and would have been an obvious design choice. The examiner further notes that "use" limitations are not structural limitations (see not above).

6. Claims 1-2, 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nelson* in view of *Iwanczyk* (US 5,227,635).

Regarding claim 1, *Nelson* and *Iwanczyk* (see explanation regarding claims 4 and 6 below) suggest a method of obtaining improved radiographic images comprising the steps of: orienting a semiconductor radiation detector having a height greater than its thickness (see

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generally Figs. 1, 4 and 6A), the detector comprising a substrate (10) and pixel sensors formed as strips (12); wherein the orientation step includes selecting an acute angle between a direction of the incident radiation such that the incident radiation mainly hits the side of the detector (col. 7, lines 7-11); and excluding at least one section of the hit area between at least one edge of the detector and at least one active sensor (i.e., the area covered by the collimator (21) as suggested by *Iwanczyk*), wherein substantially all of the radiation is dissipated within the detector (col. 4, lines 12-16).

Although *Nelson* does not disclose the particular angle as being selected to be less than about 10 degrees, absent some degree of criticality, it would have been a matter of obvious design choice within the skill of a person of routine to choose the optimum angle depending on the needs of the particular application.

Regarding claim 2, in the method suggested by *Nelson* and *Iwanczyk*, *Iwanczyk* suggests a step of collimating using a collimator with a slot (21) to prevent incident radiation from hitting the edge of the detector.

Regarding claim 4, *Nelson* does not disclose the detector includes a guard ring to sink leakage current.

Regarding the use of a guard ring, *Iwanczyk* discloses an x-ray detector (10) including a guard ring (15) to sink leakage current (col. 1, lines 41-51). *Iwanczyk* teaches that the use of a guard ring allows for improved energy detector performance (col. 1, lines 52-54). As such it would have been obvious to a person of ordinary skill in the art to modify the device disclosed by *Nelson* to include a guard ring so as to allow for improved detector performance.

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Regarding claim 6, in the device suggested by *Nelson* and *Iwanczyk* (see explanation regarding claim 4 above), *Iwanczyk* further discloses the use of a collimator (21) having a collimator slot for preventing the incident radiation from hitting the edge of the detector (col. 2, lines 38-51).

Regarding claim 7, *Nelson* discloses that several detectors may be used in order to increase the size of the detector (see generally Figs. 3, 5; and col. 6, lines 33-34).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Nelson* and *Iwanczyk*, as applied to claim 7 above, and further in view of *Jahnke* (DE 196 18 465).

Regarding claim 8, regarding the use on an absorber placed between detectors, it is well known in the art (see for example *Jahnke*) to include the use of an absorber (3) placed between adjacent detectors (1). Those skilled in the art appreciate that the use of such absorbers allow for better system performance by reducing cross-talk and scattered radiation between detectors. As such it would have been obvious to a person of ordinary skill in the art to modify the device disclosed by *Nelson* and *Iwanczyk* to include absorbers in order to improve system performance.

Response to Arguments

8. Applicant's arguments filed 6 September 2002 have been fully considered but they are not persuasive.

9. Regarding applicant's argument that *Nelson* does not teach a detector that is able to be oriented relative to the incident radiation the examiner notes that, as pointed out regarding claim 3 above, *Nelson* does suggest the detector that may be oriented (i.e., tilted) relative to incident radiation (col. 7, lines 7-11).

The examiner further notes that, contrary to applicant's assertion, the new structural language does not necessarily define the detector as a "movable" detector and that even if the

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new language was considered to define a movable detector, such consideration does not positively recite or imply any particular structural limitations. Absent some positively recited or implied limitation, the detector as claimed according to the present invention is viewed as obvious over the detector suggested by *Nelson*.

10. Regarding applicant's argument that one skilled in the art would not be motivated to arrange the detector at any other angle other than edge-on or directly to the face, or that nowhere is there to be found any suggestion or teaching in the cited art that would provide one skilled in the art the motivation to tilt the detector, the examiner reiterates the suggestion of *Nelson* that the apparent thickness of the detector may be increased by tilting the detector (col. 7, lines 7-11).

11. Regarding the particular angle being less than about 10 degrees, the examiner notes that applicant has not provided any evidence (i.e., unexpected results, etc.) that the recited angle is critical to the invention. Since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*See In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)), and *Nelson* teaches that tilting the detector to a particular angle is a result effective variable that allows for the apparent thickness of the detector to be changed, the recitation of a particular angle, such as less than about 10 degrees, is viewed as an obvious design choice within the skill of a person of ordinary skill in the art depending on the need of the particular application so as to allow for optimization of the apparent thickness of the detector.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (703) 305-0417. The examiner can normally be reached on Monday thru Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

AJG
November 7, 2002


DAVID PORTA
SUPERVISORY PATENT EXAMINER
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